

UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Utilities Service  
Technical Standards Committee "A"

Supplement No. 2, January 2005, to  
RUS Informational Publication 202-1,  
List of Materials Acceptable for Use on  
Systems of RUS Electrification Borrowers

The attached pages dated January 2005, for the "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of October through December, 2004. They replace pages dated July 2004 and October 2004. The following changes should be made in order to keep RUS Informational Publication 202-1 up to date.

<u>Remove</u> <u>Old Page</u>	<u>Add</u> <u>New Page</u>
a-1:a(1) Cond	ai-1:BLANK
f(1) Cond:g(1) Cond	f(1) Cond:g(1) Cond
g(1.1) Cond: h, i-1	g(1.1) Cond:h, i-1
k(1) Cond:k(2) Cond	k(1) Cond:k(2) Cond
ae(2) Cond:af-1	ae(2) Cond:af-1
at(1) Cond:av-1	at(1) Cond:av-1
be(4) Cond:be(4.1) Cond	be(4) Cond:be(4.1) Cond
cg-4:cg(1) Cond	cg-4:cg(1) Cond
NEW	cm(1) Cond:BLANK
gj-1:gj(1) Cond	gj-1:gj(1) Cond
rp(1) Cond:sb-1	rp(1) Cond:sb-1
sd-1:sd(1) Cond	sd-1:sd(1) Cond
se-1:se(1) Cond	se-1:se(1) Cond
U ae(2) Cond:U ae(2.1) Cond	U ae(2) Cond:U ae(2.1) Cond
U fw-1:U fz-1	U fw-1:U fz-1
U gc-1:U gk-1	U gc-1:U gk-1
U gk-2:Ugn-1	U gk-2:Ugn-1
U gn-2:U go-1	U gn-2:U go-1
U gq-1:Ugu-1	U gq-1:Ugu-1
U gu-2.1:U gv-1	U gu-2.1:U gv-1
U hf(1) Cond:U fh(2) Cond	U hf(1) Cond:U fh(2) Cond
U hr-1:U hv-1	U hr-1:U hv-1
U hy-1.1:U hy-1.2	U hy-1.1:U hy-1.2

**THIS PAGE IS  
INTENTIONALLY  
BLANK**

a - Insulator, pin type

ANSI Class	55-2	55-3	55-4
Application	5 kV	12.5/7.2 kV and 13.2/7.62 kV systems	12.5/7.2 kV and 13.2/7.62 kV systems (where greater insulation is needed)
Pinhole diameter	1 in.	1 in.	1 in.
Porcelain Products (Knox) <sup>2</sup> Victor Insulators, Inc.	253 8	261-S 5	366-S 6
ANSI Class	56-1	56-3	56-4
Application	24.9/14.4 kV distribution lines	33 - 34.5 kV transmission lines	44 - 46 kV transmission lines
Pinhole diameter	1-3/8 in. Metal thimble (unless noted)	1-3/8 in. Metal thimble	1-3/8 in. Metal thimble
Porcelain Products (Knox) <sup>2</sup> Victor Insulators, Inc.	1027-S 27-R <sup>1</sup>	2045-S 245-R	- 255-R

<sup>1</sup>Does not have a metal thimble.

<sup>2</sup>ANSI class 55-2, 55-3, 55-4, and 56-1 pin insulators manufactured at both the Knoxville and Macomb plants are acceptable.

**THIS PAGE IS  
INTENTIONALLY  
BLANK**

f - Pin, crossarm  
(Non-lead threads)  
(With square washer, nut and MF locknut)

<u>Manufacturer</u>	<u>Conditions</u>
<u>Hubbell</u> 881P - 1" thread, 5 3/4" shank 886P - 1" thread, 1 1/2" shank	To obtain experience.
<u>Hughes Brothers</u> 2775-A5-3/4, 1" thread, 5-3/4" shank	To obtain experience.
<u>Joslyn</u> J203Z, 1" thread, 5-3/4" shank J221Z, 1" thread, 1-1/2" shank J647Z, 1-3/8" thread, 7" shank J630Z, 1-3/8" thread, 1-3/4" shank	To obtain experience.

Conditional List  
g(1)  
January 2005

g - Crossarms, fiberglass

<u>Manufacturer</u>	<u>Description</u>	<u>Conditions</u>
<u>Geotek (PUP)</u>		
<u>Braced Application</u>		
T2000-96-03X	8' Type-3 Drill Pattern	To obtain experience.
T2000-96-04X	8' Type-4 Drill Pattern	
T2000-120-05X	10' Type-5 Drill Pattern	
T3000-96-03X	8' Type-3 Drill Pattern	
T3000-96-04X	8' Type-4 Drill Pattern	
T3000-120-05X	10' Type-5 Drill Pattern	
(X = color code)		
<u>Braceless (Centermount) Application</u>		
TB2000-96-03X	8' Type-3 Drill Pattern	To obtain experience.
TB2000-96-04X	8' Type-4 Drill Pattern	
TB2000-120-05X	10' Type-5 Drill Pattern	
TB3000-96-03X	8' Type-3 Drill Pattern	
TB3000-96-04X	8' Type-4 Drill Pattern	
TB3000-120-05X	10' Type-5 Drill Pattern	
(X = color code)		
<u>MacLean Power Systems</u>		
<u>Braced Application</u>		
PX08REA003	8' Type-3 Drill Pattern	To obtain experience.
PX08REA004	8' Type-4 Drill Pattern	
PX10REA005	10' Type-5 Drill Pattern	
<u>Braceless (Centermount) Application</u>		
PX08ST003	8' Type-3 Drill Pattern	To obtain experience.
PX08ST004	8' Type-4 Drill Pattern	
PX10ST005	10' Type-5 Drill Pattern	
<u>Powertrusion International, Inc.</u>		
<u>Braced Application</u>		
PST08001NR03	8' Type-3 Drill Pattern	To obtain experience.
PST08001NR04	8' Type-4 Drill Pattern	
PST10001NR05	10' Type-5 Drill Pattern	
PHT08001NR03	8' Type-3 Drill Pattern	
PHT08001NR04	8' Type-4 Drill Pattern	
PHT10001NR05	10' Type-5 Drill Pattern	
<u>Braceless (Centermount) Application</u>		
PST08001BR03	8' Type-3 Drill Pattern	To obtain experience.
PST08001BR04	8' Type-4 Drill Pattern	
PST10001BR05	10' Type-5 Drill Pattern	
PHT08001BR03	8' Type-3 Drill Pattern	
PHT08001BR04	8' Type-4 Drill Pattern	
PHT10001BR05	10' Type-5 Drill Pattern	

Note: Gripping studs or teeth on clamp type crossarm pins (item f) should not be installed against the surface of the fiberglass crossarms.

g - Crossarms, fiberglass

<u>Manufacturer</u>	<u>Description</u>	<u>Conditions</u>
<u>Shakespeare</u>		
LSC-REA-03-(X)**	8' Type-3 Drill Pattern	To obtain experience.
LSC-REA-04-(X)**	8' Type-4 Drill Pattern	
LSC-REA-05-(X)**	10' Type-5 Drill Pattern	
(**X=2-gray color or 5-dark bronze color)		

Note: Gripping studs or teeth on clamp type crossarm pins (item f) should not be installed against the surface of the fiberglass crossarms.

h - Brace, crossarm, steel

Wherever item "h" is shown on a construction drawing, use a brace from page cu.

i - Bolt, carriage

Applicable Specification: ANSI C135.1, "Standard for Galvanized Steel Bolts and Nuts."

Applicable Sizes:                      3/8 inch diameter, 3 through 6 inch length  
   1/2 inch diameter, 3 through 6 inch length

The following manufacturers have shown compliance with the applicable specifications for carriage bolts.

Dixie Electrical Manufacturing Company  
Hubbell (Chance)  
Hughes Brothers  
Joslyn Manufacturing Company  
Kortick Manufacturing Company  
MacLean (Continental)  
The Rockford Bolt & Steel Company

k - Insulator, suspension

<u>Manufacturer</u>	<u>Conditions</u>
<u>Sediver</u> 10" suspension insulator N-8R2 (ball & socket, 20,000 lbs.) CT-14R2 (clevis, 30,000 lbs.) N-14R2 (ball & socket, 30,000 lbs.)	To obtain experience.

Conditional List  
k(2)  
January 2005

k - Insulator, polymer distribution deadend

<u>Manufacturer</u>	<u>Conditions</u>
<u>Dulmison</u> Distribution deadend H-15 kV-4 H-25 kV-6	1. To obtain experience. 2. For use as deadends on distribution lines only. 3. Not recommended for use in areas subject to contamination.
<u>GLP</u> DS-15 (15 kV) DS-28 (25 kV)	1. Same as (1) above. 2. Same as (2) above. 3. Same as (3) above.
<u>Hubbell (Ohio Brass)</u> "Veri*Lite" Type PDI-15 (15 kV) Type PDI-25 (25 kV) Type PDI-35 (35 kV)	1. Same as (1) above. 2. Same as (2) above. 3. Same as (3) above.
<u>K-Line</u> Distribution deadend KL-15ASCTM (15 kV line-to-line) KL-28ASCTM (25 kV line-to-line) KL-35SCTM (35 kV line-to-line)	1. Same as (1) above. 2. Same as (2) above. 3. Same as (3) above.
<u>MacLean (Reliable)</u> DS-15G (15 kV) DS-15M (15 kV) (metal end fittings) DS-28G (25 kV) DS-28M (25 kV) (metal end fittings) DS-35G (35 kV) DS-35M (35 kV) (metal end fittings)	1. Same as (1) above. 2. Same as (2) above. 3. Same as (3) above.
<u>Porcelain Products</u> Distribution deadend PDEI-15, 15 kV PDEI-25, 25 kV	1. Same as (1) above. 2. Same as (2) above. 3. Same as (3) above.

NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary. Recommended maximum working load is 5,000 lbs.

ae - Surge Arrester, Substation\*

CONDITION OF ACCEPTANCE: To Obtain Experience

MOV Type

Manufacturer	Type	Accepted Ratings - kV	Housing	Manufacturer's Classification
ABB	SMX-30	3-312	Porcelain	Station
Cooper Power Systems	VariStar	3-312	Porcelain	Station
	VariStar AZF	3-120	Porcelain	Intermediate
	VariSTAR US	120-140	Polymer	Station – 5.6 kJ/kV <sup>(1)</sup>
	VariSTAR UI	3-108	Polymer	Intermediate
	VariSTAR US	3-108	Polymer	Station - 3.4 kJ/kV <sup>(1)</sup>
	VariSTAR US	3-108	Polymer	Station - 3.4 kJ/kV
	VariSTAR UH	3-108	Polymer	Station - 5.6 kJ/kV
	VariSTAR UH	3-108	Polymer	Station - 5.6 kJ/kV <sup>(1)</sup>
	VariSTAR UH	120-140	Polymer	Station - 8.9 kJ/kV <sup>(1)</sup>
	VariSTAR UX	3-108	Polymer	Station - 8.9 kJ/kV <sup>(1)</sup>
General Electric	Tranquell	2.7-612	Porcelain	Station
	Tranquell	3-120	Porcelain	Intermediate
Hubbell Power Systems (Ohio Brass)	PVI-LP	3-72	Polymer	Intermediate
	PVIA	3-72	Polymer	Intermediate
	DynaVar Type PVI	3-144	Polymer	Intermediate
	DynaVar Type PVN	3-228	Polymer	Station
Joslyn	Type ZS	3-240	Porcelain	Station
	Type ZSH	258-468	Porcelain	Station
	Type ZIP	3-120	Polymer	Intermediate
	Type ZSP	3-144	Polymer	Station
MagneTek	ZSE-E2A	3-39	Porcelain	Station
	ZSE-E3A	45-312	Porcelain	Station
Siemens Power	3EQ1	36-240	Polymer	Station
	3EQ4	96-444	Polymer	Station
	3EP2	12-384	Porcelain	Station
	3EP4	12-150	Porcelain	Station

\*For instructions concerning application at substations refer to RUS Bulletin 1724E-300, "Design Guide for Rural Substations." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

(1) Energy ratings based on single impulse ratings

af - Cutouts, Distribution, Open

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>
ABB	ICX	15, 27 kV
	LBU-II	15, 27 kV
Cooper Power Systems	S1	15, 27 kV
	L	15, 27 kV
Hubbell (Chance)	C	15, 27, 35 kV
	C (loadbreak)	15, 27, 35 kV
Kearney/Cooper Power Systems	HX	15, 27 kV
Power Line Hardware	DHC	15, 27 kV
S & C Electric	XS	15, 27 kV
Southern States	Series 66	15, 27 kV
	Series 70	15 kV

NOTE: The buyer should specify the load rating, voltage rating, interrupting rating and required accessories.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

af - Cutout, open-link fuse support

<u>Manufacturer</u>	<u>Mounting</u>	<u>12.5/7.2 kV 50 amp.</u>	<u>24.9/14.4 kV 50 amp.</u>
Cooper Power Systems	Crossarm	FT1A2	FT1A4
	Bushing	FT10A3	-
Kearney/Cooper Power Systems	Crossarm	6484-55	-
	Bushing	6483-59	-

NOTE: The open link fuse supports listed above are fuse supports only and have no inherent interrupting capacity. They should be used with fuse links capable of interrupting at least 1200 amperes and for transformer protection only.

at - Reflective Guy Marker, 8-foot length

Plastic or Fiberglass

Manufacturer	Conditions
* <u>Nordic</u> HG-815 yellow	To obtain experience.

\*For use with formed or automatic type deadends for guy strand; will not fit over bolt type guy clamps.

av - Conductor, ACSR

Applicable Specification: ASTM Specification B 232

Preferred Sizes:

<u>Distribution</u>	<u>Transmission</u>
4 - 6/1	1/0 - 6/1
4 - 7/1	2/0 - 6/1
2 - 6/1	3/0 - 6/1
2 - 7/1	4/0 - 6/1
1/0 - 6/1	266.8 kcmil - 26/7
2/0 - 6/1	336.4 kcmil - 26/7
3/0 - 6/1	477 kcmil - 26/7
4/0 - 6/1	556.5 kcmil - 26/7
266.8 kcmil 18/1	795 kcmil - 26/7
336.4 kcmil 18/1	954 kcmil - 54/7
477 kcmil 18/1	

NOTE: Larger sizes may be used where the engineer's study shows they are required.

The following manufacturers have shown compliance with the applicable specifications:

Alcan Cable  
Conductores Monterrey S.A. de C.V.  
Condumex  
General Cable  
Nehring  
Nexans Canada  
Nexans Korea  
Noranda  
Pirelli Cable  
Southwire  
Taihan Electric Wire

NOTES

1. Conductors with 18/1 stranding have different sag characteristics than conductors with 6/1 or 26/7 stranding. This difference in sag characteristics must be taken into consideration in the line design.
2. 266.8 kcmil 26/7, 336.4 kcmil 26/7, and 477 kcmil 26/7 may be used for distribution underbuild on transmission lines.

be - Recloser, vacuum interruption with solid dielectric

<u>Manufacturer</u>	<u>Conditions</u>
<u>ABB</u> Three phase, Type OVR electronically controlled, vacuum interruption, solid dielectric, 630 amps maximum continuous, 12500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV.	To obtain experience.
<u>Cooper Power Systems</u> Three phase, Type NOVA electronically controlled, vacuum interruption, solid dielectric, 560 amps maximum continuous, 12000 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV.	To obtain experience.
Single Phase, Type NOVA electronically controlled, vacuum interruption, solid dielectric, 400 amps maximum continuous, 8000 amps RMS symmetrical interruption, or 800 amps maximum continuous, 12500 amps RMS symmetrical interruption 15.5 kV maximum for 12.5/7.2 kV, 29.2 kV maximum for 24.9/14.4 kV.	To obtain experience.
Three phase, Type NOVA-TS Triple-Single electronically controlled, vacuum interruption, solid dielectric, 400 amps maximum continuous, 12500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 29.2 kV maximum for 24.9/14.4 kV.	To obtain experience.
<u>G &amp; W Electric Company</u> Three phase, electronic, VIPER Series, vacuum interruption, solid dielectric, 800 amps maximum continuous, 12,500 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14/4 kV.	To obtain experience.

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.
2. Reclosers are not acceptable with load current, bushing CT battery chargers.

Conditional List  
be(4.1)  
July 2004

be - Recloser, vacuum interruption with solid dielectric

<u>Manufacturer</u>	<u>Conditions</u>
<u>Joslyn Hi-Voltage</u> Three-phase, Type TRIMOD 300 series, vacuum interruption, solid dielectric foam, 560 amps maximum continuous, 12000 amps RMS symmetrical interruption, 15.5 kV maximum for 12.5/7.2 kV, 27 kV maximum for 24.9/14.4 kV	To obtain experience.
Single-phase, Type TRIMOD 100 series, vacuum interruption, solid dielectric foam, 560 amps maximum continuous, 12500 amps RMS symmetrical interruption, 17.1 kV maximum for 12.5/7.2 kV, 29.3 kV maximum for 24.9/14.4 kV	To obtain experience.

NOTES:

1. Series trip reclosers with ratings greater than 100 amp for 12.5/7.2 kV application, greater than 200 amp for 24.9/14.4 kV application, and 280 amp for 34.5/19.9 kV application are acceptable only with ground trip device. Shunt trip reclosers without ground trip devices may not be used with trip settings higher than 200 amp for 12.5/7.2 kV application, greater than 400 amp for 24.9/14.4 kV application, and 560 amp for 34.5/19.9 kV application.
2. Reclosers are not acceptable with load current, bushing CT battery chargers.

cg - Switch, three-pole, group-operated  
(Factory Preassembled)

Manufacturer	Acceptable Mounting on Structures	Vertical Break		Side Break	
		Type	kV	Type	kV
ABB	Horizontal (A)			SLB-3(L)	15-25
Bridges Electric <sup>#</sup>	Horizontal (A)			Vector(L)	15-27
	Phase over phase (A)			Vector(L)	15-27
	Vertical (A)			Vector(L)	15-27
<sup>#</sup> Both operating shaft and hookstick versions of switch accepted.					
Cooper Power Systems (Kearney)	Horizontal (A)			M-FORCE	15-35
	Phase over phase (A)			M-FORCE	15-35
	Vertical (A)			M-FORCE	15-35
Hubbell (Chance)	Horizontal (A)			D7(L)	15-27
	Phase over phase (A)			D7(L)	15-27
	Vertical (A)			D7(L)	15-27
	Horizontal (B)			D7(L)	34.5
	Phase over phase (B)			D7(L)	34.5
	Vertical (B)			D7(L)	34.5
Inertia Engineering	Horizontal (A)			LBS(L)	15-35
	Vertical (A)			LBS(L)	15-35
	Phase over phase (A)			LBS(L)	15-35
S&C <sup>*</sup>	Horizontal (A)			Alduti(L)	15-25
				Alduti(L)	34.5
				(200 kV BIL)	
	Phase over phase (A)			Alduti(L)	25
				Alduti(L)	34.5
				(200 kV BIL)	
Vertical (A)			Alduti(L)	15-25	
			Alduti(L)	34.5	
			(200 kV BIL)		
Phase over phase (B)		Alduti(L)34.5	Alduti(L)	34.5	
	Vertical (B)		Alduti(L)34.5		

(L) Means gas or solid material full-load interrupters are accepted and available.

(A) Not suitable for substation use.

(B) For station and transmission use only. The steel crossarm base must be grounded with an adequate grounding connector. 200 kV BIL only.

NOTE: Switches with factory-assembled crossarm type bases for distribution lines must have non-conducting crossarm type bases, non-conducting braces, and insulated interphase and control rods, except as otherwise noted.

\* Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

Conditional List  
cg(1)  
July 2004

cg - Switch, air, three-pole, group operated

<u>Manufacturer</u>	<u>Conditions</u>
<u>Cleaveland/Price</u> Type V2-C (15-69 kV) Vertical break, horizontal or vertical mounting	1. To obtain experience. 2. Insulated interphase and control rods required on wood distribution structures.
Type RL-C (15-69 kV) Single side break, horizontal or vertical mounting	
<u>G &amp; W Electric Company</u> Type MK-40A 15 kV through 345 kV(horizontal upright mounting)	1. To obtain experience. 2. Insulated interphase and control rods required on 15 kV and 23 kV models used on wood structures. 3. Steel interphase base required when mounted as in RUS Drawing TM-3.
Type LPV, 3-pole 72.5-272 kV, 1200 amp., 1600 amp., 2000 amp., center sidebreak for horizontal mounting.	To obtain experience.
<u>Hubbell (Chance)</u> Type AR Side-break, horizontal phase-over-phase, and vertical mounting, with non-conducting crossarm type base and insulated interphase and control rods, 15, 25 and 34.5 kV(grounded wye)	To obtain experience.

(L) Means full-load interrupter accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

cm – Insulators, spool (Polymer)

Manufacturer	Conditions
Hubbell (Chance) C909-1032P (ANSI Class 53-2)	To obtain experience.

**THIS PAGE IS  
INTENTIONALLY  
BLANK**

gj - Crossarm Assemblies and Arm Spacers

Distribution

Wood crossarm assembly complete with braces and attaching hardware, fittings and bolts

Crossarm Assembly

<u>Manufacturer</u>	<u>Crossarm Size</u>	<u>Catalog No.</u>
Brooks	3-1/2" x 4-1/2" x 8'-0"	3103-A8
	3-3/4" x 5-3/4" x 8'-0"	3103-C8
	3-3/4" x 7-3/4" x 8'-0"	3203-A8
	3-3/4" x 7-3/4" x 10'-0"	3203-A10
Hughes Brothers	3-1/2" x 4-1/2" x 8'-0"	2890A
	3-3/4" x 5-3/4" x 8'-0"	2890B
	3-3/4" x 7-3/4" x 8'-0"	2892-A
	3-3/4" x 7-3/4" x 10'-0"	2892-B
Pennington	3-1/2" x 4-1/2" x 8'-0"	C500B
	3-3/4" x 5-3/4" x 8'-0"	C500F
	3-3/4" x 7-3/4" x 8'-0"	C500M

Twin Arm Spacer\*

To be used with standard hardware, 3-5/8" x 4-5/8" x 8'-0" crossarm, and 28" wood braces

Line Hardware                      CAS-455

\*Restricted to applications where the conductor's maximum design tension is less than 1250 lbs. and to conductor sizes 1/0 ACSR and below.

gj - Crossarm Assemblies

Braceless, wood

<u>Manufacturer</u>	<u>Conditions</u>
---------------------	-------------------

Aluma-Form

HD-DEA-86-EB-REA	To obtain experience.
HD-2-DEA-86-EB-REA	
HD-DEA-108-EB-REA	
HD-2-DEA-108-EB-REA	

Hughes Brothers

3377-A7.5	To obtain experience.
3377-A8.5	
3377-A9.5	

Braceless, fiberglass

Geotek (PUP)

DA2500-96	To obtain experience.
DA2500-120	
DA3000-96	
DA3000-120	

MacLean Power Systems

PZ08LD	To obtain experience.
PZ10LD	
PY08SD	
PY10SD	

Powertrusion

PSD082A1FRUS	To obtain experience.
PSD102A1FRUS	
PHD082A1FRUS	
PHD102A1FRUS	

Shakespeare

IDB096N1224(X)RUS**	To obtain experience.
XDB096N1224(X)RUS**	
HDB096N1224(X)RUS**	
IDB120N1224(X)RUS**	
XDB120N1224(X)RUS**	

(\*\*X=2-Gray Color  
5-Dark Bronze Color)

rp - Wildlife Guards

Bushings and Live Parts Covers

<u>Manufacturer</u>	<u>Conditions</u>
<u>Chris Kaye (Critter Guard)</u> 201 - "L" Bracket 202 - Roller 203 - Wheel	To obtain experience.
<u>Hendrix Wire &amp; Cable</u> Catalog No. BG-9	To obtain experience.
<u>Hendrix (Eco Electrical Systems, Inc.)</u> EICG-1 EICG-1-WLPT EICG-1-20 EICG-1-32	To obtain experience.
<u>Kaddas Enterprises Inc.</u> KE1045A* birdguard KE1066* arrester cap KE1077* transformer bushing cover KE1053* arrester cap KE1064* transformer bushing cover KE 1049* birdguard	To obtain experience.
<u>Tripp (Eco Electrical Systems, Inc.)</u> ECC-1 ECC-2-27-150BIL-S&C-Version 10 ECC-3-27-150BIL-S&C-Version 9 ECC-4-27-125BIL-S&C-Kearney HX ECC-5-ABB-LBU	To obtain experience.

NOTE: The material composition of these items does not contain a flame-retardant unless specified by the manufacturer.

\*Specified by manufacturer as being flame-retardant

Anti-Perch Devices

<u>Manufacturer</u>	<u>Conditions</u>
<u>Hendrix Wire &amp; Cable</u> Catalog No. HPP-24	To obtain experience

NOTE: The material composition of these items does not contain a flame-retardant unless specified by the manufacturer.

sb - Switch, disconnect (single-pole, hook operated station class)

NEMA standard switches for station or line structure use where single-pole switching is permissible

Manufacturer	Type	Voltage Ratings	System Voltages Line to Line
ABB	HPL	15 thru 69 kV	12.5 thru 69 kV
Bridges	EH	15 thru 69 kV	12.5 thru 69 kV
	EHL(L)	15 thru 34.5 kV	12.5 thru 34.5 kV
Cleaveland/Price	LCO-C	15 thru 69 kV	12.5 thru 69 kV
Cooper Power Systems	D2(PL)	15 and 23 kV	12.5 thru 24.9 kV
G & W Electric	B-2M	15 thru 69 kV	12.5 thru 69 kV
	EV(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
Hubbell (Chance)	M3(PL)	15 thru 27 kV	12.5 thru 24.9 kV
Johnson	HPT	15 thru 69 kV	12.5 thru 69 kV
Joslyn (Hi-Voltage)	HU	15 thru 34.5 kV	12.5 thru 34.5 kV
	HI	15 thru 34.5 kV	12.5 thru 34.5 kV
Kearney/Cooper Power Systems	M-72(PL)	15 thru 69 kV	12.5 thru 69 kV
	H-72	15 thru 34.5 kV	12.5 thru 34.5 kV
MEMCO	STV	15 thru 69 kV	12.5 thru 69 kV
	STU	15 thru 69 kV	12.5 thru 69 kV
Morgan	DHS(PL)	15 thru 69 kV	12.5 thru 69 kV
Royal Switchgear	BT	15 thru 69 kV	12.5 thru 69 kV
	BLT(PL)	15 and 23 kV	12.5 thru 24.9 kV
S & C*	LBD(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
	Alduti (L)	15 and 25 kV	12.5 thru 24.9 kV

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available for voltages 34.5 kV and below. Consult switch manufacturer concerning loop switching applications at higher voltages.

\*Available with porcelain insulators. Available with "Cypoxy" cycloaliphatic epoxy insulators through 34.5 kV on request.

sd - Current Transformers  
Outdoor Type

Manufacturer	.6 kV	15 kV	25 kV	34.5 kV	69 kV
ABB	CSF/CMS	KOR-11	ICT-150	ICT-200	ICT-350
	CMF	KON-11	KOR-15	KOR-20	-
	CLC/CLE	KOT-11	KOT-15	-	-
Andover	DCBW	-	-	-	-
	DCCW	-	-	-	-
	DCAB	-	-	-	-
G.E.C. Durham Industries (Astra)	AA&TA	-	-	-	-
	AB	-	-	-	-
	AD&AC	-	-	-	-
Electromagnetic Industries (Square D)		CO3-110	CO3-150	CO3-200	IK-350
General Electric	JCR-0	JKW-5	JKW-6	JKW-7	JKW-350
	JCW-0	JCK-5	JKW-150	JKW-200	KG-350
	JAK-0	-	KG-150	KG-200	-
	JAD-0	-	-	-	-
Kuhlman Electric		BB-15-971	BB-25-973	BB-34-975	COF-350
		BB-15-972	BB-25-974	BB-34-976	-
Schlumberger	R6S	-	-	-	-
	R6SA	-	-	-	-
	R6M	-	-	-	-
	R6L	-	-	-	-

NOTE: The transformer types listed above are accepted in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

sd - Current Transformers  
Outdoor Types

<u>Manufacturer</u>	<u>Conditions</u>
<u>Electromagnetic Ind. (Square D)</u> Type UMCT, 0.6 kV Type UCT, 0.6 kV Type IK 4-350-69, 69 kV (cycloaliphatic resin bushings)	To obtain experience.
<u>Ritz Instrument Transformers, Inc.</u> GIFU 15-01; 0.3 B0.1-1.8, 15kV GIFU 15-01; 0.3 B0.1-0.5, 15kV GIFU 25-01; 0.3 B0.1-0.9, 25kV GIFU 25-01; 0.3 B0.1-2.0, 25kV GIFS 36-55; 0.3 B0.1-0.9, 34.5kV GIF 36-69; 0.3 B0.1-2.0, 34.5kV GIF 72.5-68; 0.3 B0.1-2.0, 69 kV	To obtain experience.

se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>.6 kV</u>	<u>15 kV</u>	<u>25 kV</u>	<u>34.5 kV</u>	<u>69 kV</u>
ABB	PPM	VOG-II	LPT-150	LPT-200	LPT-350
	-	VOY-II	VOG-15	VOG-20	-
	-	VOZ-II	VOZ-15	VOZ-20	-
Andover	DVE-6	-	-	-	-
	DVF-6	-	-	-	-
Electromagnetic Industries (Square D)		PO5-110	PO5-150	PO5-200	U3-350-69
General Electric	JVA-0	JVW-5	JVW-6	JVW-7	ET-350
	JVP-0	JVW-110	-	-	JVT-350
	-	-	JVT-150	JVT-200	-
Kuhlman Electric	-	PTT-110-977	-	-	POF-350
Schlumberger	T5R	-	-	-	-
	T6R	-	-	-	-
	T7R	-	-	-	-

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>Conditions</u>
<u>G.E.C. Durham Industries (Astra)</u> Type DB, 0.6 kV Type DA, 0.6 kV Type DF, 0.6 kV	To obtain experience.
<u>Electromagnetic Industries (Square D)</u> Type U-450, 0.6 kV Type U-4-350-69, 69 kV (cycloaliphatic resin bushings)	To obtain experience.
<u>Ritz Instrument Transformers, Inc.</u> VZF 15-20; 2 Bushing 0.3WXYZ, 15 kV VZF 15-10; 2 Bushing 0.3WXY, 15 kV VEF 15-10; 1 Bushing 0.3WXY, 15 kV VEF 15-20; 1 Bushing 0.3WXYZ, 15 kV VZF 25-10; 2 Bushing 0.3WXYZ, 25 kV VEF 25-10; 1 Bushing 0.3WXYZ, 25 kV VZF 36-10; 2 Bushing 0.3WXY, 34.5 kV VEF 36-10; 1 Bushing 0.3WXY, 34.5 kV VEF 72-03; 1 Bushing 0.3WXYZ, 69 kV	To obtain experience.

U ae - Arresters, Surge  
 (For Underground System Pole Risers)

CONDITION OF ACCEPTANCE: To Obtain Experience

Manufacturer	Type	MOV Type		Manufacturer' Classification	Housing
		Accepted Ratings - kV	Duty		
ABB	HMX	9,10,18	Heavy	Intermediate *	Polymer
	RMX	9,10,18			
	XPR	9,10,18,27	Heavy		
Cooper	CPS AZR VariSTAR	9,10,18,27	Heavy	Distribution	Porcelain
	URS UltraSIL VariSTAR	9,10,18,27	Heavy	Distribution	Polymer
General Electric	Tranquell ** U.D. II	9,10,18,27	Normal	Distribution	Porcelain
	Tranquell	9,10,18,27	Normal	Intermediate	Porcelain
Hubbell (Ohio Brass)	DynaVar-PVR	9,10,18,27	Heavy	Riser Pole	Polymer
Joslyn	ZRP	9,10,18,27	Heavy	Distribution	Polymer
Kearney/Cooper Power Systems	Univar SGR	9,10,18,27	Normal	Riser Pole	Porcelain

\*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

\*\*A non fragmenting U.D. II Arrester is available for 9 & 10 kV designs at higher cost when specified.

Conditional List

U ae(2.1)

July 2004

U ae - Arresters, Surge  
(For Underground System Pole Risers)

CONDITION OF ACCEPTANCE: To Obtain Experience

MOV Type (Internally Gapped)

<u>Manufacturer</u>	<u>Type</u>	<u>Accepted Ratings - kV</u>	<u>Duty</u>	<u>Manufacturer's Classification</u>	<u>Housing</u>
Cooper	AZR500 VariGap	9,10,18,27	Heavy	Distribution	Porcelain
	URG UltraSIL	9,10,18,27	Heavy	Distribution	Polymer
	VariGap				

U fw - Secondary Tap Connector

Manufacturer	Type or Catalog No.
Tyco (Raychem)	Compression Connectors CRSM-CT-34/10-150 CRSM-CT-53/13-200 CRSM-CT-84/20-250 Standard Split Bolt CRSM-CT-53/13-200

U fz - Transformer Connector Block, Insulated  
Multiple Cable Connectors

Watertight - For use in all locations

Manufacturer	Connection Type	Catalog Number
Blackburn	Lug	SCU, with lugs and sleeves
Burndy	Lug	Stud Mole with sealing sleeve
Utilco	Set Screw	PTF-SS, Watertight Insulated transformer Connector block

Non-Watertight - For use in above grade locations only

Alcoa	Lug	Interchange 1 ABBD Series (Disconnectable) Use with A9 insulating boots
Alcon	Set Screw	VBTT Series with double sealing sleeve
Blackburn	Set Screw	TSB-J58C (Permanent)
	Set Screw	TSB-D58C (Disconnectable)
Burndy	Set Screw	K-D Series (Disconnectable) K-DF Series (Permanent)
Connector Mfg. Co.	Set Screw	Uni-Joint Bar Connectors, (Series RLS, NSM- C, NDS-C, NSC, ZS-C, ZSU-C, RLUS) (Permanent)
	Set Screw	Uni-Joint Bar Connectors, (Series RLSS, NSSM-C, NSSC, ZQC, ZQU-C, RLUS) (Disconnectable)
ESP	Lug	Types SUR and RDSR(Removable) (With Types LA and AL-lugs and Sleeve kits)
	Set Screw	Type UPSO-I (Permanent) Type UPM-I (Disconnectable)
Homac	Lug	DF Series
	Lug	FTU 125 Series(Disconnectable) with flood seal sleeve kit
	Set Screw	LRT Series
Hubbell (Fargo)	Bolted	GUC Series
	Set Screw	GUS-460S Series
MacLean (Reliable)	Set Screw	15912-REA (Disconnectable)
Penn Union	Lug	Type DBAT (Permanent)
	Lug	Type DBAT-LH (Disconnectable) Use with Series DBTB, DBTBF and DBTH lug and Sleeves kits
Preformed	Set Screw	SC-C series (Permanent)
	Set Screw	CSC-Q-C Series, SC-Q-C series (Disconnectable)
Utilco	Set Screw	PTF-IN (Permanent)
	Set Screw	PTF-CJNU, PSS Series (Disconnectable)
Vector Connectors Corp.	Set Screw	TQL Series (Disconnectable) (with insulating boot)

Note: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U gc - Shield, cable riser

Manufacturer	Dia. (Inches)	Length (Feet)
<u>Galvanized Steel</u>		
Almat Metal Limited	2 1/4	8
Electrical Materials	2 - 3 - 4 - 5*	5*
Hubbell (Chance)	2 - 3 - 3 1/2	5 - 9
Joslyn	2 - 3 - 3 1/2*	5 - 8*
Midland-Ross (Kindorf Snapduct)	2 1/2 - 3 1/2 - 5 (14 ga. galv. steel)	2 1/2 - 5 - 10

Plastic and Fiberglass

Applied Extrusion Technologies (plastic) (Power Mold, I, II, III)	2 - 3 - 4 - 5 - 6*	5 - 8 - 10*
Carlton	2 - 3 - 4 - 5 - 6*	10*
Custom Plastics	2 - 3 - 4 - 5*	5 - 10*
Electrical Materials (plastic)	1 - 2 - 3 - 4 - 5 - 6*	5 - 8 - 10*
Joslyn (plastic)	2*	10*
Nordic (fiberglass)	2 - 3 - 5*	5 - 10*

(Order by size and length)

\*All sizes available with back plate.

Full Round\*\*

Smith Fiberglass Products (standard wall)	2 - 3 - 4 - 5	30
--	---------------	----

\*\*Full round riser shield is to be mounted directly to the surface of the pole with no standoffs.

U gk - Terminations, Indoor

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

Manufacturer \_\_\_\_\_ Catalog No. \_\_\_\_\_

PREMOLDED

<u>Cooper Power Systems</u>	Fasterm Stress Cone (15 & 25 kV)
<u>Elastimold (ESNA)</u>	Style 35-MSA (15, 25 & 35 kV)
<u>Hubbell (Chardon)</u>	Termi-Matic, Type A or G (15, 25 & 35 kV)

HEAT SHRINK

<u>DSG-Canusa</u>	CT Series (15kV, 25kV, 35kV)
<u>G&amp;W</u>	ESTS15_PLA (15 kV) ESTS25_PLA (25 kV)
<u>Hellermann</u>	MVTS15_PLA (15 kV) MVTS25_PLA (25 kV)
<u>Tyco (Raychem)</u>	HVT (15, 25 & 35 kV)

COLD SHRINK

<u>3M</u>	QT III Series (15 kV) Quick Term II Series (25 & 35 kV)
<u>Joslyn</u>	JIPT Series (15, 25 kV) JPT Series (25 kV)
<u>Tyco (Raychem)</u>	TFT Series (15, 25, 35 kV)

INSULATED WRAP

<u>Plymouth/Bishop</u>	Stress-Wrap (15, 25 & 35 kV)
------------------------	------------------------------

U gk - Terminations, outdoor  
(with mounting hardware)\*

(When ordering, specify conductor size, type, whether  
copper or aluminum, insulation diameter, and type of  
mounting desired)

<u>Manufacturer</u>	<u>Catalog Number</u>
---------------------	-----------------------

---

POLYMER

PREMOLDED

<u>Cooper Power Systems</u>	Fasterm Series (15 & 25 kV)
<u>Elastimold (ESNA)</u>	Style 16-THG (15 and 25 kV) (for bare concentric neutral cable) Style 35-MT (35 kV) (for bare concentric neutral cable) Style PCT-1 (15 kV) (for jacketed cable) Style PCT-2 (25 kV) (for jacketed cable)
<u>Hubbell (Chardon)</u>	Termi-Matic, Type G (15, 25 and 35 kV)

HEAT SHRINK

<u>DSG-Canusa</u>	CT Series (15kV, 25kV, 35kV)
<u>G&amp;W</u>	ESTS15_PLO (15 kV) ESTS25_PLO (25 kV)
<u>Hellermann</u>	MVTS15_PLO (15 kV) MVTS25_PLO (25 kV)
<u>Plymouth/Bishop</u>	SWO Kit (15, 25 and 35 kV)
<u>Tyco (Raychem)</u>	HVT (15, 25 and 35 kV)

COLD SHRINK

<u>Joslyn</u>	JPT Series (15, 25, 35 kV)
<u>Tyco (Raychem)</u>	TFT Series (15, 25, 35 kV)
<u>3M</u>	QT III Series (15, 25, & 35 kV)

---

PORCELAIN

<u>G &amp; W</u>	"Eliminator" 15 kV, E 25 kV, E 35 kV, E
<u>Joslyn</u>	"Easy-On II" (15, 25 and 35 kV)

\*Mounting Hardware is used to attach termination to mounting bracket (U hd or U hj).  
NOTE: Some of the above terminators may require ordering the mounting hardware separately.

U gn-1  
July 2004

U gn - Enclosures, equipment

Applicable Specifications: "RUS Specifications for Equipment Enclosures," U-4

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Durham</u>	AT-42 Series (dead-front) AT-54 Series (dead-front)
<u>Elliott</u>	EPM-PTS (dead-front)
<u>Malton Electric</u>	ME Series (dead-front) MEV Series (dead-front)
<u>Maysteel</u>	EL100 (dead-front)
<u>Nordic</u>	ND-28 and ND-33

NOTE:

1. The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.
2. These enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

U gn - Enclosures, Equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Cooper Power Systems</u>	SecTER Series I and II (Single-Phase and Three-Phase)
<u>Durham</u>	AMSP( ) Series
<u>Fiberglass Fabricators</u>	FSC-32 Single Phase FSC-62 Three Phase
<u>Malton Electric</u>	ME Series MEH Series
<u>Maysteel</u>	CW200 Series CW300 Series
<u>Nordic</u>	ND-20, ND-36, ND-40, ND-55, ND-68
<u>Power Design Inc.</u>	Type CJP series, single-phase and three-phase, 15 and 25 kV
<u>Rough Rider Industries</u>	Series RUF93
<u>Shallbetter</u>	SPMS Series (dead-front)

NOTE:

1. The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.
2. These enclosures have been certified as meeting the requirements of ANSI C57.12.28. A copy of the certification is available from the manufacturer.

U go-1  
July 2004

U go - Fault Indicator  
(For Construction Unit UM 6-4)

Manufacturer	Type
Cooper Power Systems	S.T.A.R. CR, DR, ER, MR, TPR
Edison Control Corporation	Series EC100 (single phase) Series EC300 (three phase) (Available with mounting kit KT5002)
Fisher Pierce	Series 1514 (current reset, single-phase) Series 1515 (current reset, three-phase) Series 1541 (time reset, single-phase) Series 1543 (time reset, three-phase) Series 1547 (adaptive trip)
Horstmann GmbH	FCI-LT Series Time Reset 29-3014 (.85 to 1.57 inch) 29-3015 (1.57 to 2.37 inch) Current Reset 29-3114 (.85 to 1.57 inch) 29-3115 (1.57 to 2.37 inch)

Note: Fault indicators that require the drilling or cutting to the enclosure for mounting are not acceptable.

U gq - Boot or sleeve, insulated\*

Manufacturer	Catalog Number
Blackburn	MPC9 MPC15
Electrical Materials	100-B (For pad-mounted transformer spade terminals)

\*Use restricted to 120/208 volt 500 kVA transformers and larger not equipped with threaded studs.

U gu-1  
January 2005

U gu - Pedestal, Power  
(Above-Grade)  
Refer to Construction Drawing UK5

Applicable Specifications: "RUS Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Inside Dimensions Inches</u>	<u>Height Inches</u>	<u>Catalog No.</u>
<u>API</u>	6X6	32	API 6X6
	9X10	25-1/2	API 9 X 10
	10X11	34	API 10 X 11
	10X11	12-1/4	API 10 X FM
	10X11	72	API 10X11XL
	10X14	22-1/2	API 10 X 14
	10X14	26-1/2	API 10 X 14 WB
	16X28	38	API 16X28
	13 Dia.	25	API 176
<u>Coil Sales</u> (Charles Industries)	8.25 Dia	31-1/2	CPLP-8
	8.25 Dia	31-1/2	CPLP-8I(Integral Stake)
	10.75 Dia	31-1/2	CPLP-10
	10.75 Dia	31-1/2	CPLP-10I(Integral Stake)
<u>Electrimold</u>	14.5 x 19.5	31.5	EFSO-111630
<u>Fiberglas Fabricators</u>	14 X 9	31	FFSP Series
	15.5 X 15.5	30	FFSP Series
	15.5 X 15.5	36	FFSP Series
	14 X 9	42	FFSP Series
	9 X 9	31	FFSP Series
<u>MacLean (Reliable)</u>	8 x 8	38	UP 8HLP
	8 x 8	46	UP 8HP
	10-1/2 x 10-1/2	26	UP 10HLP
	16-1/2 x 10-1/2	36	UP 1016HLP
	10-1/2 x 10-1/2	42	UP 10HP
<u>Nordic</u>	8 x 8	44	PR-50, PR-55
	9 x 14	30	PR-149 (stake)
			PR-150 (stakeless)
	9 x 14	30	PRMC 150 (low profile)
	9 x 14	24	PRMC-160
	9 x 14	30	PRMC-170 (high profile)
	9 x 14	36	PRMC-190
	9 X 13	30	PSP-91330
	10 X 15	38	PSPF-101538
	15 X 15	30	PSP-151530
	21 X 21	15	PHH-212115
	16 X 19	12	PHH-161912
<u>PenCell</u>	11X14	37	AG-15

U gu - Power Pedestal  
(Below-Grade)  
Refer to Drawings UK6

Applicable Specifications: "RUS Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Malton</u>	Fiberglass secondary pedestal FSP31139, FSP301515
<u>Pen-Cell</u>	PE Series-High Density Polyethylene (HDPE) base;lid available in HDPE, fiberglass, aluminum, or stainless steel;PEM Series with modular construction
<u>Quazite</u>	Power Pedestal – PV, Boxes - PX/PE Series, PR/LR Series, PC, PG, LG Series
<u>Synertech Moulded Products</u>	S1212, S1118, S1324, S1730, S2436, S3048 and S3660
<u>Thermodynamics</u>	PP-91 and PPV-91 Series

U gv-1  
July 2004

U gv - Stake, Power Pedestal  
Refer to Construction Drawing UK5

Manufacturer	Length Inches	<u>Catalog No.</u>	
		For Power Pedestal Only	For Joint Pedestal
Hubbell (Fargo)	42-60-72-78	UP-530S Series	UP-530J Series
MacLean (Reliable)	72-78-84	DM Series	DM Series

U hf - Jacketed Cable Restoration Kits  
(For resealing concentric neutral wires after installation of splices in jacketed underground cable)

(When ordering, specify diameter of cable over jacket)

<u>Manufacturer</u>	<u>Conditions</u>
<u>Elastimold</u> PCS-1 Power Cable Seal	To obtain experience.
<u>Homac</u> CNC Series Concentric Neutral Cover	To obtain experience.
<u>Joslyn</u> Shrinklite JRS Series	To obtain experience
<u>Raychem</u> WCSM (Tubing Type) MWTM (Tubing Type) CRSM (Wraparound Type)	To obtain experience.
<u>3M</u> HSJ Series (Heat Shrink) SJ Series (Cold Shrink)	To obtain experience.

Conditional List

U hf(2)

July 2004

U hf - Terminator Sealing Kits

(For resealing concentric neutral wires after installation of elbows or outdoor terminations on jacketed underground cable.)

(When ordering, specify diameter of cable over jacket.)

<u>Manufacturer</u>	<u>Conditions</u>
<u>Cooper Power Systems</u> JS200 Elastic Seal	To obtain experience.
<u>Elastimold</u> 200 ECS Elbow Cable Shield, Cold Shrink	To obtain experience.
<u>Homac</u> CNC Series Concentric Neutral Cover	To obtain experience.
<u>Raychem</u> ESA, Heat Shrink	To obtain experience.
<u>3M</u> 8450 Series, Cold Shrink	To obtain experience.

U hr - Secondary tap or splice cover, submersible

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Blackburn	Type WDBS (#2 through #4/0), Type DBS (250 kcmil through 1000 kcmil)
Connector Mfg. Co.	Utilug Sure Seal
Elastimold (ESNA)	Style 86
ESP	TSC Series
Homac	FSS Series
Joslyn	Shrinktite JCLS Series
Kearney/Cooper Power Systems	Aqua-Seal Kit
Preformed	HT Series
Plymouth/Bishop	Splice-Wrap
Raychem	Rayvolve RVS Series
3M	PST Series 8420

Heat Shrink Tubing (with sealant throughout)

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
AMP	Black heat-shrink tubing
CANUSA-EMI	CFW
ESP	HSB
Panduit	Heat shrink insulating cover and tubing
Raychem	WCSM cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products
3M	ITCSN tubular cable sleeve

U hv-1  
July 2004

U hv - Cable, Underground  
15 kV and 25 kV Cable

Applicable Specification:	RUS Specification U-1
Conductor (15 kV):	Copper or Aluminum - #2 AWG through 1000 kcmil
Conductor (25 kV):	Copper or Aluminum - #1 AWG through 1000 kcmil
Insulation:	Crosslinked Polyethylene (XLP) (a) indicates Union Carbide 4201 XLP (b) indicates BP 521 XLP Tree-retardant Crosslinked Polyethylene (XLP-TR) (1) indicates Union Carbide 4202 XLP-TR (2) indicates BP H119Y XLP-TR (3) indicates BP H118Y XLP-TR Ethylene Propylene Rubber (EPR)
Neutral:	Copper Concentric Neutral
Jacket:	High Molecular Weight Polyethylene

Manufacturer	Insulation(s)	Flat Strap Neutral Available
Conductores Monterrey, S.A. de C.V.	XLP (a), XLP-TR (1), EPR	No
Condumex	XLP (a), XLP-TR (1), EPR	No
General Cable	XLP (a,b), XLP-TR (1,3), EPR	Yes
Hendrix	XLP (a), XLP-TR (1, 2, 3), EPR	No
Hubbell (Kerite)	EPR	Yes
Nexans Canada	XLP (a), XLP-TR (1), EPR	No
Nexans Italia	EPR	No
Okonite	XLP (a), XLP-TR (1), EPR	Yes
Pirelli	XLP (a), XLP-TR (1), EPR	Yes
Rome	XLP (a), XLP-TR (1), EPR	Yes
Southwire	XLP (a), XLP-TR (1), EPR	No

U hy - Splice, Underground, Permanent

(when ordering, specify conductor size, type, whether copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Cooper Power Systems</u>	<u>15 kV and 25 kV</u> EZ II straight and transition splice #3 through 4/0 <u>35 kV</u> 2603934B Series straight splice
<u>Elastimold (ESNA)</u>	<u>15 kv</u> Style 1500S, straight splice, through #1/0 Style 25-S, straight splice, 2/0 through 4/0 Style I5PCJ-1, straight splice, through 4/0 Style 25-Y, Y-splice <u>25 kV</u> Style K-25-S, straight splice Style K-25-Y, Y-splice Style 25PCJ-1, straight splice, through 4/0 <u>35 kV</u> Style M-250-S, straight splice
<u>DSG-Canusa</u>	<u>15 kV</u> CJ 10 Series, heat shrinkable joints  <u>25 kV</u> CJ 10 Series, heat shrinkable joints  <u>35kV</u> CJ 10 Series, heat shrinkable joints
<u>Hubbell (Chardon)</u>	<u>15 kV</u> Straight Splice through #1/0, Model 9U16A-100 "Uni-Matic" Through #2/0, Model 9U06A <u>25 kV</u> "Uni-Matic" Through #2/0, Model 9U06A
<u>Pirelli</u>	<u>15 kV and 25 kV</u> "Elaspeed" style EPJMe straight splice, #2 through 1000 kcmil
<u>3M</u>	<u>(15, 25, 35 kV)</u> 5400 Series Quick Splice/Quick Splice II/Quick Splice III, 15 kV 5411R cable repair splice 5411R/HSJ-I cable repair splice (for jacketed cable)

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Raychem</u>	<u>15 kV</u> HVS 1510-R__ 200 Amp Splice kit
	<u>25 kV</u> For Bare Concentric Neutral Cable: HVS-2510-REAX in-line joint HVS-2510E-R-REAX repair joint For Jacketed Cable: HVS-2510-JCN-REAX in-line joint HVS-2510E-RJ-REAX repair joint
	<u>35 kV</u> For Bare Concentric Neutral Cable: HVS-3510E-REAX in-line joint For Jacketed Cable: HVS-3510E-JCN-REAX in-line joint
<u>Sigmaform</u>	<u>15 kV</u> SSK Series (Heat Shrink)
<u>Tyco (Raychem)</u>	<u>15 kV</u> CAS-15WJ-2, cold-applied splice
	<u>25 kV</u> For Jacketed Cable: CAS-28WJ-2, cold-applied splice
	<u>35 kV</u> For Jacketed Cable: CAS-35M, cold-applied in-line splice